

From
Fern Prescott

Daniels Canyon

Chinese wax mine

By Howard R. Ritzma

The Chinese Wax mine in Daniels Canyon, Wasatch County, is a small deposit of black, viscous, waxy oil emplaced in fractured, brecciated Oquirrh Formation (Pennsylvanian-Permian) on the Strawberry Valley (or Charleston) thrust sheet where the thrust has over-ridden the west margin of the Uinta Basin. The oil has apparently migrated up a fracture zone from the Wasatch or lower Green River Formations (early Eocene) beneath the thrust. The fracturing is related to a regional lineament which crosses much of northern Utah.

The deposit which has been mined sporadically for 60 or more years is the only one in Utah with a record of exploitation solely as a source of petroleum products.

The Chinese Wax mine or the Daniels Canyon oil-impregnated rock deposit as it is officially named is located in Wasatch County, 200 to 300 feet east of U.S. Highway 40 about 1.0 mile north of Daniels Summit and about 0.1 mile south of the entrance to the U.S. Forest Service Lodgepole Campground.

A short, primitive road leading east from U.S. Highway 40 along the north side of a minor, unnamed tributary of Daniels Canyon (or Daniels Creek) provides access within 50 feet to the remains of the foundation of a retort and the lower workings of the mine. The area is mountainous and thickly vegetated. Elevation is about 7,900 feet.

History

The Chinese Wax mine was discovered around the turn of the century and the superficial resemblance of the material to ozokerite found in veins in the Soldier Summit area some 25 miles south was noted. Filings on the deposit are supposed to have been made in the early 1900's, but the first recorded are attributed to William S. Bethers, J.P. Jordan, Ephraim Bethers and George Bethers on Feb. 1, 1909. The mine was worked sporadically for a number of years but then lay idle.

In the late 1920's interest revived in the mine, and in 1929 and 1930 a company, Daniel Mining and Refining Company, was organized and commenced operations at the mine. The promoter of the project was Ludlow Glascke, an engineer and geologist with experience in ozokerite mining in the Soldier Summit area. Glascke sought support for his venture in Heber City and held meetings in Heber Town Hall to interest investors. Response in those years of the Depression was lukewarm, but finally enough money was raised to open the mine and begin retorting operations. The

principal investor was Joe Grover, a Park City resident of Chinese descent. Stock certificates issued in 1930 show Grover as president and Glascke as secretary of the firm. The name—Chinese Wax mine—is derived from Grover's direction of the operation. The retort erected at the mine came from an oil shale plant at Carlin, Nev. The retorted oil was a black waxy substance which was further distilled or refined at the site. One end product was a high grade, light yellow oil which was used in automobiles and machinery in the Heber City area. Some lamp oil and candle wax was also produced and used in Heber City and Park City. The market for these products was very limited. The mine and plant closed after about two years of small-scale operations. The retort used at the Chinese Wax mine was dismantled, reportedly during World War II, and moved to the vicinity of DeBeque in western Colorado's oil shale region.

Despite its minor size and the small and probably noncommercial nature of the mining and retorting operation, the Daniels Canyon oil-impregnated rock deposit is the only such deposit in Utah to be exploited solely as a source of petroleum products. This contrasts to the sizeable tonnage of material mined from other deposits and used for paving material.

Geologic setting

The Chinese Wax mine is located on the west margin of the Uinta Basin where the basin has been over-ridden by the Strawberry Valley (or Charleston) thrust.

The Daniels Canyon deposit is located in outcrops of the Oquirrh Formation (Pennsylvanian-Permian) in beds about 8,000 feet below the top of the formation, probably in the lower part of the Wolfcampian (Permian) portion of the formation. Total thickness of the Oquirrh Formation on the overthrust sheet is between 25,000 and 30,000 feet. The formation is overturned in the vicinity of the deposit with dips ranging from 60 degrees to 75 degrees to the northeast. The deposit is located in quartzite and siliceous limestone, all strongly fractured.

Based on the cross section accompanying this paper it is estimated that the overthrust sheet in the vicinity of the deposit is about 2,500 feet thick and that it consists entirely of the Oquirrh Formation. No other occurrences of oil are known in the Oquirrh.

The strike of the fracture zone can be discerned from the alignment of mine entries and dumps and is confirmed by what can be deduced of the trend of the underground workings which have followed the zone.

Regional tectonic studies of the Uinta Mountains and Uinta Basin in 1969 and 1970 revealed the presence of a topographic and structural lineament extending from an area northeast of Vernal for 120 miles in a west-southwest direction to the vicinity of Springville in central Utah. Subsequently, it was found to extend 120 miles farther to the west-southwest, almost to the Utah-Nevada boundary.

The lineament was first

recognized by this writer in 1969 and traced in considerable detail in 1970 and 1971. In 1971 an inquiry to the Utah Geological Survey led to the rediscovery of the Chinese Wax mine and the designation of it as a previously unrecognized oil-impregnated rock deposit. When the deposit was located definitely and this location plotted on a tectonic map, it was found to lie squarely astride the lineament. Two other oil-impregnated rock deposits, Lake Fork and Spring Branch, are also on or adjacent to the feature; and two more, Tabiona and Whiterocks, are on branches of the lineament or closely parallel lineations. In October 1971 this writer presented his retiring presidential address to the Utah Geological Association entitled, "A Utah Lineament: Petroleum, Mineralization and Other Ramifications," in which the feature was named the Towanta Lineament and its relationship to the Daniels Canyon deposit discussed. In June 1974 an expanded version of this paper, entitled "Towanta Lineament, Northern Utah," was presented to the First International Conference on the New Basement Tectonics held in Salt Lake City. This paper is scheduled for publication by the Utah Geological Association in volume covering the conference proceedings.

The location of these oil-impregnated rock deposits on or adjacent to the Towanta Lineament and on branches or parallel lineations can scarcely be coincidental. It appears that faulting and fracturing along the lineament has provided a conduit for migration of oil from organic source beds known to exist at depth in the Uinta Basin or that, in some cases, the lineament has acted as a barrier to migrating oil which might have reached the outcrop in some other area. The two factors likely acted in combination in many cases.

Structural implications

The presence of waxy oil resembling ozokerite, typical Uinta Basin crude oil, in the fractured Oquirrh Formation on the Strawberry Valley (or Charleston) thrust sheet poses some interesting structural questions.

First, if the source of the oil is in the Wasatch or lower Green River Formation, source of Uinta Basin ozokerite (Hunt, Stewart and Dickey, 1954; Hunt, 1963), it can be inferred that these formations are present beneath the Strawberry Valley thrust sheet.

Secondly, if Wasatch or lower Green River Formation beds are present beneath the Strawberry Valley thrust sheet, then the margin of the Uinta Basin extends farther west than previously considered and the thrust faulting postdates Wasatch or early Green River deposition (at least late early Eocene) and is considerably younger than previously considered.

Finally, the oil apparently has migrated upward through the thrust sheet through fractures or faults along the regional Towanta Lineament, implying disturbance along the lineament after emplacement of the thrust sheet in late early Eocene or early medial Eocene time.

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